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ABSTRACT

To examine the effects of developmental and remedial course participation on student retention and academic performance, Sinclair Community College, in Ohio, undertook a study of outcomes after 3 years for the 1,798 first-time, degree or certificate students who enrolled in fall 1990. Students were grouped based on need for remedial coursework and participation in remedial courses, while performance measures included ratio of credit hours earned to those attempted, cumulative grade point average (GPA), and selected grades. Study findings included the following: (1) overall, 40.4% of the cohort were still enrolled by spring 1993; (2) students who took all recommended developmental courses had a higher retention rate than those who took some recommended courses, who took no courses, and who did not need remediation; (3) students who took all recommended coursework had a higher ratio of credit hours attempted and were more likely to succeed in English and math courses than those who took only some or none of their recommended coursework; (4) academic success measured by GPA could not be predicted by developmental course participation, since credit hours in developmental classes are not included in cumulative records; and (5) with respect to performance in college-level English and mathematics courses, students who took recommended developmental courses performed at a satisfactory level in their subsequent coursework, though not better than those with higher placement scores. (Data tables are appended.) (KP)

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ED 383 382

THE IMPACT OF DEVELOPMENTAL EDUCATION ON STUDENT PROGRESS: A THREE YEAR LONGITUDINAL ANALYSIS

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SINCLAIR COMMUNITY COLLEGE

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JC 950.307

EXECUTIVE SUMMARY

PURPOSE:

This study was designed to examine the effects of developmental/remedial course participation on student retention and academic performance at Sinclair Community College over a three year period.

STUDY DESIGN:

The cohort, selected from the student record system, consisted of all degree or certificate-seeking students (N=1,798) enrolled for the first time at Sinclair in the Fall of 1990. The students were subdivided into groups on the basis of their need for remedial/developmental coursework and whether or not they chose to take advantage of the recommendations for remediation. Demographic characteristics of the students in the cohort were similar in most respects to the overall student body enrolled at Sinclair that Fall (N =18,938).

Retention was defined as continued enrollment. Measures of performance included: a ratio of credit hours earned to credit hours attempted, cumulative grade point average, and grades on selected initial college-level courses.

FINDINGS:

Students who took all recommended developmental courses tended to stay in school longer than those who took some or no recommended courses and also had a higher retention rate than those students who did not have any developmental courses recommended.

Students who took all recommended coursework tended to have a higher ratio of credit hours attempted, *and* were more likely to succeed in English 111 and Math 101, than those who took only some of their recommended developmental courses. Their level of academic performance, however, did not surpass that of the students who chose to take none of their recommended courses or those who needed no remediation.

Academic success, as measured by Grade Point Average, couldn't be predicted in a straight forward manner by developmental course participation. All students improved their performance over time and the typical student attained a GPA of "C" or better by the end of two years at Sinclair.

THE IMPACT OF DEVELOPMENTAL EDUCATION ON STUDENT PROGRESS: A THREE-YEAR LONGITUDINAL ANALYSIS

I. PURPOSE OF THE STUDY:

This study was designed in order to examine the effects of remedial course participation on student retention and academic performance over three academic years. Retention here was defined as continued enrollment, and academic performance was measured by grade point average and grades on post-remedial initial collegiate-level courses over the same three year period. The particular questions of interest were:

1. Did students who took recommended remedial courses stay in school longer than those who did not?
2. Did students who took recommended remedial courses perform differently than those who did not?

II. STUDY DESIGN:

A cohort of students was selected from the student record system of Sinclair Community College in Dayton, Ohio. This cohort consisted of 1,798 degree or certificate-seeking students enrolled for the first time at Sinclair in the Fall of 1990. In this quarter, all entering students were required to take an assessment exam, and were then given recommendations as to the need for developmental course work, but were not as yet required to take recommended developmental courses. The students could therefore be subdivided into groups on the basis of their need for developmental course work and whether or not they chose to take advantage of the recommendations for remediation.

At Sinclair, the remedial/developmental department (referenced in this report as "DEV") consists of courses in which underprepared students enroll in order to acquire the academic skills they need to succeed in initial collegiate-level courses. It cannot be declared as a major field of study.

The term "ASSET" found throughout this report, is a course placement assessment system produced by the American College Testing company and designed to determine which students are in need of remedial/developmental assistance. For the purpose of this report, the terms "remedial" and "developmental" are used interchangeably.

A. Biographical Information

Basic biographical information was available on all students, including gender, racial/ethnic category and age. In the cohort selected, the majority of students (58%) were female and their ages ranged from 19-87 with a mean age of 26 years. Approximately 17% were classified as minority students, which includes all ethnic categories except Caucasian. The student body as a whole that Fall consisted of 18,938 students, with a distribution of 62% females and 16% minority students.

The fact that the mean age of the all students that quarter (32 years) was higher than the mean age of the sample is not surprising since the overall student body includes a number of older students who are not seeking degrees and are mainly enrolled in courses for personal interest.

B. Educational Factors

Information specific to students' attendance at Sinclair was also available and included: their major field of study and the academic division to which it belongs, quarterly attendance records, credit hours attempted and completed, term and cumulative grade point averages, developmental course participation and completion information, and course grades in initial collegiate-level English and math courses.

Among the six academic divisions, Business Technologies and Allied Health were most strongly represented (32% and 24% respectively), and the Fine & Performing Arts division had the lowest representation (8%). This is roughly equivalent to the divisional distribution in the College as a whole except that the Liberal Arts division was underrepresented in the sample (11% as compared to 39% collegewide).

For purposes of this study, seven basic developmental courses were chosen from those available at Sinclair. The purpose of these core developmental courses is to help those students whose ASSET scores indicated that they needed some developmental assistance to prepare for entry-level English and math. The core courses included two reading improvement courses (DEV 064 & DEV 065), three courses concerned with writing skills (DEV 074, DEV 075, and DEV 110) and two concerned with math (DEV 085 and DEV 108).

Students who are successful in completing all of the reading or writing developmental courses which were recommended, can then continue with one of the two entry-level English courses. These two courses have somewhat different orientations. ENG 111 is meant to develop basic reading and composition skills while ENG 131 deals mainly with business communications and is more heavily focused on grammar, spelling and vocabulary. Students attaining a satisfactory grade in all recommended developmental math courses can then proceed to take Math 101, which is elementary algebra.

Due to the fact that student performance in the developmental courses is recorded as either Satisfactory or Unsatisfactory, and credit hours earned are not included in cumulative credits, progress in the initial collegiate-level courses (grade point averages and credit hours earned) was used to measure academic performance.

C. Assessment Data

Scores on three of the four subscales (Reading, Writing, and Numeric) of the ASSET assessment exam were available for all students. Algebra subscores were available for only 1,371 students, as those who have not taken algebra before coming to Sinclair are not required to take the algebra portion of the ASSET test. Standard cutoff levels recommended by the testing company (ACT) were used to determine the need for developmental course participation. Approximately 82% of the students in the sample had at least one developmental course recommended, while the remaining 18% scored sufficiently high on all subscales so that no developmental coursework was recommended.

D. Assessment Group Assignment

On the basis of developmental course recommendation in the Fall of 1990 and subsequent developmental course participation, students were assigned to one of four groups:

1. Those who chose to take *all* of the recommended DEV courses (N = 533)
2. Those who chose to take *some* of the recommended DEV courses (N = 451)
3. Those who chose to take *none* of the recommended DEV courses (N = 486)
4. Those for whom no DEV courses were recommended due to ASSET scores above the cut-off levels (N = 328)

III. ANALYSIS:

The data elements above were obtained directly from the student record system and were analyzed using the Statistical Package for the Social Sciences (SPSS). Analysis results here are reported as statistically significant only if they reached or exceeded the .05 level of significance. All referenced tables are found in the Appendix.

A. ASSET Group and Divisional Differences

Before considering retention and performance, it may be helpful to look at some basic differences in the four ASSET and six divisional groups.

Table 1 shows the biographical distribution within the ASSET groups as compared to the overall sample. While the mean age was very similar for all groups, there were noticeable differences in gender and ethnicity. For instance, the percentage of females was considerably higher in the group who took all recommended developmental courses, while those groups who took no DEV courses or had no developmental work required had a noticeably smaller percentage of minority students.

The four ASSET groups showed significant differences in their original scores on the ASSET exam, as can be seen in Table 2. Not surprisingly, the students who tested out of developmental coursework also had the highest mean scores on all four subscales. *Those students who chose to take none of the recommended developmental courses had the next highest mean ASSET scores while the students who participated in only some of their recommended developmental courses had the lowest scores originally.*

Table 3 illustrates the differences in mean ASSET scores among the six academic divisions. Analysis of variance showed that there were significantly different mean scores for each of the four subscales. Students from the Fine & Performing Arts division had the highest Reading & Writing scores while the Engineering students scored highest on the Numeric portion. Mean scores on the Algebra portion were significantly higher for those students enrolled in the Business division, although the degree of difference was somewhat smaller for this subscale.

B. RETENTION

At the outset of the study, in the Fall of 1990, there were 1,798 students in the cohort. Over the course of the next year, 789 students ceased to enroll so that by the Spring of 1992 there were 1,009 students remaining in the sample (a decrease of 43.9%). By the Spring of 1993, another 283 students were no longer enrolled leaving a total of 726 students still enrolled out of the original 1,798. This remaining total of 726 students represents an *overall* retention rate of 40.4% (or a decrease of -59.6%).

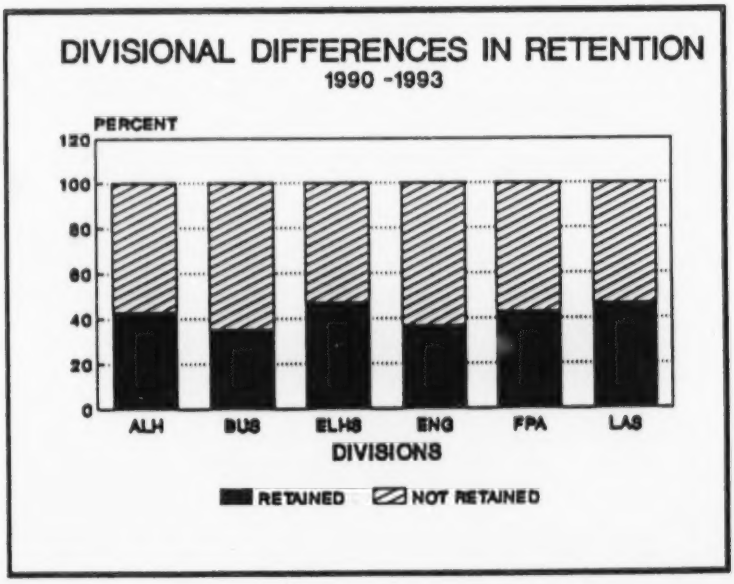
Since the study covered a period of three years, part of the attrition in the sample could be due to completed programs or graduation. Of those who were not enrolled at the end of the 1992-93 school year, 180 (10%) had earned 90 or more credit hours and would have been eligible for graduation in most programs. Given the possibility that all of those 180 students actually *did* graduate, the enrollment decrease that could be attributed to *non-graduation* factors would be - 49.6%.

In order to determine which factors may have contributed to enrollment decreases, several analyses were performed to see if there were any differences between those students who remained three years and those who did not return. A breakdown of the sample distributions in the second and third years is presented in Table 4.

The retained vs. not retained groups did not differ significantly on any of the demographic characteristics. The final group of 726 students did contain slightly more females than were present in the original population, but the ethnic and age distributions remained nearly the same.

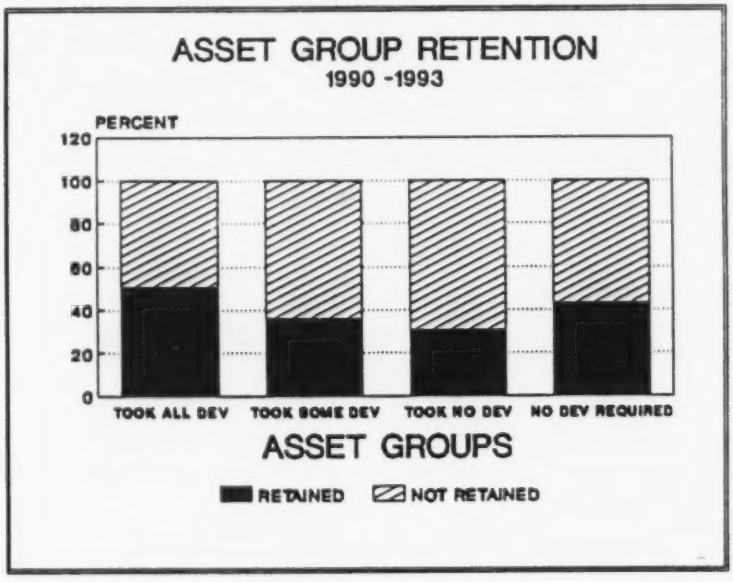
In the final year, however, there was a significant difference between the retained and not retained groups as to their divisional membership. Students remaining at the end of the study were more likely to be from the divisions of Allied Health (ALH), Liberal Arts & Sciences (LAS) or Extended Learning & Human Services (ELHS) than from the remaining three divisions. Figure 1 below shows the overall pattern of retention for each of the academic divisions over the three year period. Retention among the divisions ranged from 47.1% for the Extended Learning & Human Services division to 35.6% for Business Technologies (BUS).

Figure 1



The change in enrollment over the three years for each of the ASSET groups is found in Table 5 (and illustrated in Figure 2 below). ***Students who took all recommended developmental courses tended to stay in school longer than those who took some or no recommended courses and thus had a higher retention rate than those students who did not have any developmental courses recommended.***

Figure 2



C. PERFORMANCE

In addition to the information on retention patterns over the three year period, several performance measures were used in the study. These included: attempted and earned credit hours, cumulative grade point average, and grades on selected initial college-level courses (English 111, English 131 and Math 101). These performance outcomes were then analyzed for each of the ASSET groups to see if there were significant differences between the groups as to their academic success.

Credit hour history for each of the ASSET groups across the three years can be found in Table 6. For each year, credit hours attempted and earned were summed across quarters so that the mean reflects average credit hours taken and completed over the period of one academic year. The earned/attempted ratio, which is a measure of successful course completion, reflects the total number of credit hours earned that year divided by the total number of credit hours attempted.

During the first year of the study, 1990-91, there were significant differences among the four ASSET groups. ***Students who had taken all their recommended developmental courses tended to take more credit hours than students in the other groups but had a lower earned/attempted ratio than those who took no DEV courses or needed no developmental coursework. Students who took partial developmental coursework had the lowest credit hour performance ratio.***

These are not totally unexpected findings for two reasons: 1) academic performance can be adversely affected by a heavy course load, and 2) students in the first two ASSET groups had fairly low mean ASSET scores initially, so that, it would not be surprising to find that they had more difficulty with their coursework.

It is interesting to note that after the first year, the four ASSET groups gradually became similar in their patterns of credit hours attempted and earned. While the ratio of hours earned to attempted did improve for *all* groups over the three years, the students in the first two ASSET subgroups (those who took all or some of their required developmental courses) continued to have slightly lower performance ratios.

The second performance measure considered was student grade point averages. Mean cumulative GPA's for each of the four ASSET groups in the Spring of each academic year is found in Table 7. A mean of 2.00 indicates a "C" average which was defined as successful course completion. *Please note that the number of students used in the calculations for the first year was slightly less than the original group of 1,798. This is due to the fact that 24 students took only developmental courses during the three quarters of 1990-91 and therefore had a cumulative GPA of zero since, as mentioned earlier, credit hours earned in Developmental classes are not included in cumulative credits.*

Analyses indicate that there were significant differences in mean grade point average between the four ASSET groups. In the first year, students who took *all* recommended developmental courses did have a higher cumulative GPA than those who took only partial requirements, but their grade performance did not exceed those who refused or did not need remediation. While classroom performance as measured by GPA improved each year for all ASSET groups, those who needed remediation and participated in developmental courses continued to lag behind the other two groups.

Apparently, academic success as measured by GPA couldn't be predicted in a straight forward manner by developmental course participation. Other factors, such as incoming ability level or background experiences, may play a more significant role in determining academic success. It is important to note, however, that *all students, even those who needed developmental intervention, improved their performance over time and the typical student managed to attain a grade point average of "C" or better by the end of two years at Sinclair.*

The final performance measure to be examined was grades received, over the three years, in three initial college-level courses: Math 101, English 111, and English 131. (A short description of these courses can be found earlier in this report). Results of the grade analysis are found in Table 8 and summarized in the following table.

Percent With Grade of "C" or Better:

	ALL DEV	SOME DEV	NO DEV	NO DEV NEEDED	TOTAL
ENG 111	68.6%	64.6%	81.9%	85.3%	74.6%
ENG 131	61.4%	76.9%	85.3%	88.6%	74.7%
MTH 101	52.0%	43.5%	55.9%	79.2%	57.4%

By the end of the three years, over 65% of the original 1,798 students had taken English 111, 32% had taken Math 101, and only 178 students (less than 10%) had taken the business-oriented English 131. Students who had taken all recommended developmental courses were more likely to have completed all three initial college-level courses than were those who took only some or none of their recommended developmental courses. It is possible that by completing developmental coursework, these students felt better prepared to proceed with their initial college-level courses.

Looking at the percentage of successful completions (attaining a grade of "C" or better) in English 111 and Math 101, we see that a larger percentage of those in the group who took all recommended developmental courses succeeded than did those students who only chose to take some recommended courses, BUT both of these groups fell short of the success rate found among students who had taken none of their recommended developmental courses or needed no remediation.

While it is easy to hypothesize why those who needed no remediation might perform at the highest level, it is harder to understand the apparent success of those students who supposedly needed developmental coursework but chose not to take it. One possible explanation has to do with original ability. As can be seen in Table 2, students who had developmental courses recommended but chose not to take them, had the second highest mean scores on all subscales of the ASSET examination, surpassed only by those who scored high enough to require no developmental courses. At Sinclair, in addition to the ASSET exam taken upon entry, students are administered an exam on the first day of class in all of the developmental courses and, if they demonstrate sufficient knowledge of the subject matter to be presented in that class, they are moved to the next level of coursework. It is not unlikely that those who were on the borderline for remediation recommendations were referred out of some or all of their developmental courses, and were thus sufficiently capable to perform well in subsequent college-level courses.

Consequently, it appears that the two groups who *did* participate in the developmental program may actually have been most in need of help at the outset of their college careers. For these students, willingness to take recommended courses paid off when it came to later initial college-level course performance (in Math 101 and English 111) insofar as the students who took **all** recommended developmental courses outperformed those who had not completed early developmental work.

It should also be noted that ASSET group performance in the business-oriented English 131 differed somewhat from the pattern seen in the other two courses in that here there were *more* successes among those who took some but not all of the recommended developmental sequence. Since developmental participation was not directly related to success in English 131, it is possible that current developmental courses are not geared to preparing students for those skills that are stressed in English 131. Performance in this particular course may be more dependent on general academic ability or specific background experiences than it is with developmental preparation.

IV. RECAP AND CONCLUSIONS:

The following conclusions address the questions of interest mentioned earlier in this report as to the effects of developmental course participation on student retention and academic performance.

A. RETENTION

There was a 40.4% retention rate overall for the three year period, with students majoring in programs within the Extended Learning & Human Services division, retaining the greatest percent of their incoming students.

Students who took all recommended developmental courses tended to stay in school longer than those who took some or no recommended courses and also had a higher retention rate than those students who did not have any developmental courses recommended.

B. PERFORMANCE

Students who took *all* recommended coursework tended to have a higher ratio of credit hours earned to credit hours attempted than those who took *some* of their recommended developmental courses, but a lower ratio than those who chose to take none of the recommended developmental courses or those who needed no remediation.

Students who took *all* recommended developmental courses were more likely to succeed in English 111 and Math 101 than those who took only *some* of their recommended developmental courses, but they were the *least likely of all groups to succeed in English 131.*

In general, students who took recommended developmental courses performed at a satisfactory level in their subsequent coursework, though not better than those groups with higher ASSET scores initially.

APPENDIX

TABLE 1

BIOGRAPHICAL CHARACTERISTICS
PERCENT DISTRIBUTION
BY ASSET GROUP
FALL 1990

	TOOK ALL DEV	TOOK SOME DEV	TOOK NO DEV	NO DEV REQUIRED	OVERALL
GENDER					
MALES	34.1%	40.6%	49.2%	48.5%	42.4%
FEMALES	65.9%	59.4%	50.8%	51.5%	57.6%
ETHNIC IDENTITY					
NON-MINORITY	78.4%	73.6%	87.9%	94.2%	82.6%
MINORITY	21.6%	26.4%	12.1%	5.8%	17.4%
MEAN AGE	23.0	22.9	23.2	22.2	22.9

TABLE 2

MEAN ASSET PLACEMENT SCORES
BY ASSET GROUP
FALL 1990

ASSET GROUPS		ASSET SUBSCORES READING	WRITING	NUMERIC	ALGEBRA
TOOK ALL DEV	MEAN	40.46	39.23	37.47	27.56
	(N)	(533)	(533)	(533)	(387)
TOOK SOME DEV	MEAN	37.01	37.10	35.62	26.79
	(N)	(451)	(451)	(451)	(315)
TOOK NO DEV	MEAN	41.40	41.42	39.62	28.22
	(N)	(486)	(486)	(486)	(380)
NO DEV REQUIRED	MEAN	47.24	48.07	46.09	32.68
	(N)	(328)	(328)	(328)	(289)
ANALYSIS OF VARIANCE:		F=197.60 ($p<.0001$)	F=318.67 ($p<.0001$)	F=218.94 ($p<.0001$)	F=62.75 ($p<.0001$)

TABLE 3

MEAN ASSET PLACEMENT SCORES
BY ENTERING DIVISION
FALL 1990

DIVISIONS		ASSET SUBSCORES READING	WRITING	NUMERIC	ALGEBRA
ALLIED HEALTH	MEAN	40.56	41.06	38.10	27.59
	(N)	(429)	(429)	(429)	(311)
BUSINESS TECHNOLOGIES	MEAN	40.99	41.02	39.59	29.29
	(N)	(582)	(582)	(582)	(428)
EXTENDED LEARNING & HUMAN SERVICES	MEAN	40.09	39.62	37.73	28.40
	(N)	(170)	(170)	(170)	(131)
ENGINEERING TECHNOLOGIES	MEAN	41.60	40.30	41.02	28.93
	(N)	(286)	(286)	(286)	(220)
FINE & PERFORMING ARTS	MEAN	42.23	42.14	39.36	28.82
	(N)	(140)	(140)	(140)	(129)
LIBERAL ARTS & SCIENCES	MEAN	41.81	41.30	38.55	28.62
	(N)	(191)	(191)	(191)	(152)
ANALYSIS OF VARIANCE:		F=2.88 (P<.01)	F=3.24 (P<.01)	F=8.55 (P<.001)	F=2.90 (P<.05)

TABLE 4

SAMPLE COMPARISONS
RETAINED VS. NOT RETAINED

	2nd yr 1991 - 92		3rd yr 1992 - 93	
	RETAINED (N=1009) %	OUT OF SAMPLE n=(789) %	RETAINED (N=726) %	OUT OF SAMPLE n=(1072) %
GENDER				
MALES	40.8%	44.5%	38.7%	55.0%
FEMALES	59.2%	55.5%	61.3%	45.0%
ETHNIC CATEGORY				
AFRICAN AMER/BLACK	12.9%	17.0%	13.9%	15.2%
CAUCASIAN	83.9%	80.3%	82.5%	82.3%
ASIAN P.I.	1.4%	0.5%	1.4%	0.8%
HISPANIC	0.7%	1.4%	1.0%	1.0%
AMERICAN INDIAN	0.5%	0.8%	0.4%	0.7%
NON-RES/ALIEN	0.6%	0.0%	0.8%	0.0%
AGE				
19 OR LESS	58.8%	45.5%	58.9%	49.0%
20-29 YEARS	26.6%	36.5%	27.6%	33.3%
30-39 YEARS	11.4%	12.0%	11.3%	11.9%
40-49 YEARS	2.6%	5.1%	1.8%	5.0%
50+ YEARS	0.6%	0.9%	0.4%	0.8%
ENTERING DIVISION **				
ALH	25.4%	21.9%	25.5%	22.7%
BUS	30.2%	35.1%	28.5%	35.0%
ELHS	9.8%	9.0%	11.0%	8.4%
ENG	14.9%	17.2%	14.5%	16.9%
FPA	8.2%	7.2%	8.2%	7.5%
LAS	11.5%	9.6%	12.3%	9.5%
ASSET GROUPS **				
TOOK ALL DEV	36.3%	25.5%	37.3%	29.2%
TOOK SOME DEV	22.5%	27.9%	22.6%	25.3%
TOOK NO DEV	21.8%	29.8%	20.7%	28.0%
NO DEV REQUIRED	19.4%	16.8%	19.4%	17.5%

** NOTE: SIGNIFICANT TESTS OF DIFFERENCE:
1. 1992-93 (ENTERING DIVISION - CHI SQUARE = 15.11, $p < .01$)
2. 1991-92 (ASSET GROUP - CHI SQUARE = 34.28, $p < .0001$)
3. 1992-93 (ASSET GROUP - CHI SQUARE = 20.22, $p < .001$)

NO SIGNIFICANT DIFFERENCES FOR ANY OTHER CATEGORY

TABLE 5

ASSET GROUP RETENTION

ASSET GROUP	YEAR 1	YEAR 2	PERCENT CHANGE	YEAR 3	PERCENT CHANGE	OVERALL PERCENT CHANGE
TOOK ALL DEV	533	366	-31.3%	271	-26.0%	-49.2%
TOOK SOME DEV	451	227	-49.7%	164	-27.8%	-63.6%
TOOK NO DEV	486	220	-54.7%	150	-31.8%	-69.1%
NO DEV REQUIRED	328	196	-40.2%	141	-28.1%	-57.0%
OVERALL	1798	1009	-43.9%	726	-28.0%	-59.6%

TABLE 6

MEAN CREDIT HOURS ATTEMPTED
MEAN CREDIT HOURS EARNED
RATIO OF HOURS EARNED/ATTEMPTED

	1990-91			1991-92			1992-93		
ASSET GROUPS	HOURS ATT	HOURS EARNED	EARN/ATT RATIO	HOURS ATT	HOURS EARNED	EARN/ATT RATIO	HOURS ATT	HOURS EARNED	EARN/ATT RATIO
TOOK ALL DEV									
(N)	(533)	(533)	(533)	(366)	(366)	(366)	(271)	(271)	(271)
MEAN	29.33	20.85	0.68	24.72	18.05	0.69	23.44	18.15	0.71
TOOK SOME DEV									
(N)	(451)	(451)	(451)	(227)	(227)	(227)	(164)	(164)	(164)
MEAN	22.53	15.39	0.61	23.79	18.42	0.71	21.54	16.52	0.71
TOOK NO DEV									
(N)	(486)	(486)	(486)	(220)	(220)	(220)	(150)	(150)	(150)
MEAN	19.96	16.10	0.75	22.07	17.68	0.76	20.47	17.38	0.81
NO DEV REQ.									
(N)	(328)	(328)	(328)	(196)	(196)	(196)	(141)	(141)	(141)
MEAN	24.74	20.38	0.70	25.05	21.51	0.80	21.90	18.92	0.84
ANOVA	$p<.001$	$p<.001$	$p<.001$	NS	$p<.05$	$p<.001$	NS	NS	$p<.001$

TABLE 7

ASSET GROUP PERFORMANCE

MEAN CUMULATIVE G.P.A

	SPRING 1991	SPRING 1992	SPRING 1993
TOOK ALL DEV			
MEAN	1.81	2.17	2.29
(N)	(518)	(366)	(271)
TOOK SOME DEV			
MEAN	1.52	2.14	2.30
(N)	(442)	(227)	(164)
TOOK NO DEV			
MEAN	2.17	2.63	2.76
(N)	(486)	(220)	(150)
NO DEV REQUIRED			
MEAN	2.47	2.79	2.87
(N)	(328)	(196)	(141)
OVERALL			
MEAN	1.96	2.39	2.50
(N)	(1774)*	(1009)	(726)
ANOVA TESTS	F=43.74	F=32.68	F=26.06
0F DIFFERENCE	P<.001	P<.001	P<.001

* NOTE: Students who took ONLY remedial courses for the entire 1990-91 year were removed from GPA calculations.

TABLE 8

ASSET GROUP PERFORMANCE

PERCENT WHO RECEIVED A PASSING GRADE
FALL 1990 - SPRING 1993

	TOOK ALL DEV	TOOK SOME DEV	TOOK NO DEV	NO DEV REQUIRED	OVERALL
ENGLISH 111					
TOT	423	223	254	272	1172
"C" OR BETTER	290	144	208	232	874
% OF TOTAL	68.56%	64.57%	81.89%	85.29%	74.57%
ENGLISH 131					
TOT	70	39	34	35	178
"C" OR BETTER	43	30	29	31	133
% OF TOTAL	61.43%	76.92%	85.29%	88.57%	74.72%
MATH 101					
TOT	221	108	111	130	570
"C" OR BETTER	115	47	62	103	327
% OF TOTAL	52.04%	43.52%	55.86%	79.23%	57.37%
NUMBER STUDENTS	585	435	450	328	1798
% TOOK ENG111	72.31%	51.26%	56.44%	82.93%	65.18%
% TOOK ENG131	11.97%	8.97%	7.56%	10.67%	9.90%
% TOOK MAT101	37.78%	24.83%	24.67%	39.63%	31.70%